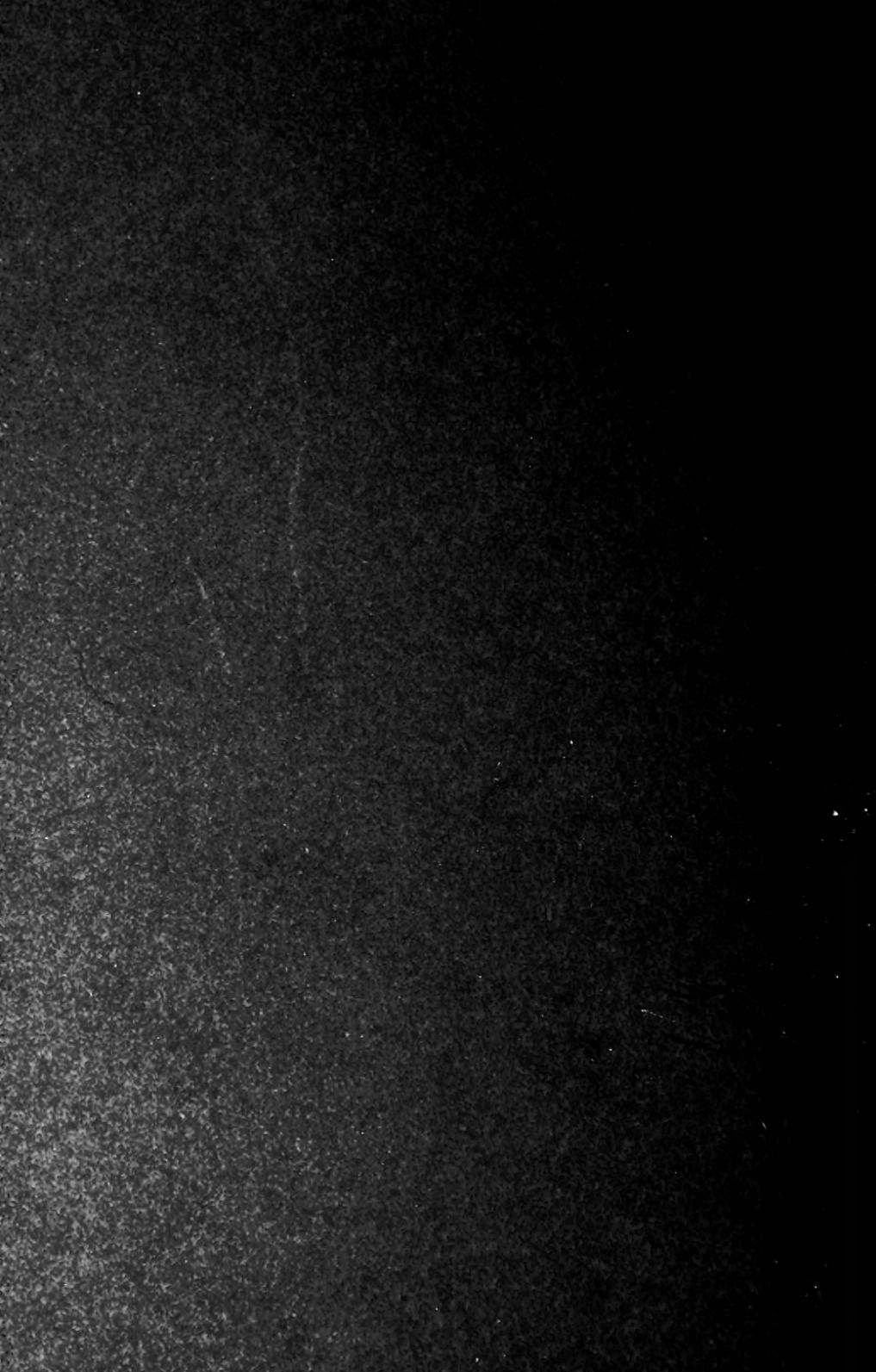


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Clements, F. E. and others

Guide to the trees and
shrubs of Minnesota.



GEOLOGICAL AND NATURAL HISTORY SURVEY OF MINNESOTA

FREDERIC E. CLEMENTS, *State Botanist*

Minnesota Plant Studies

II.

GUIDE

TO THE

TREES AND SHRUBS OF MINNESOTA

SECOND EDITION

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University of Minnesota
Minneapolis
September 1910

BOT
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(Minnesota Plant Studies



II.)

G U I D E

TO THE

TREES AND SHRUBS OF MINNESOTA

SECOND EDITION

F. E. CLEMENTS

C. O. ROSENDAHL, F. K. BUTTERS

107841
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University of Minnesota
Minneapolis
September 1910

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Preface

The first edition of the "Guide to the Trees and Shrubs of Minnesota" is completely exhausted. In the preparation of a new edition, the text and keys have been revised, and a number of species, especially cultivated ones, have been added. Occasion has also been taken to provide a number of illustrations, for the sake of giving the student a clearer idea of contrasting terms. The illustrations have been drawn from Gray's "Lessons in Botany," and the authors are under obligation to the publishers, the American Book Company, and to the holders of the copyright of the book for kind permission to use them. As with the other numbers of "Minnesota Plant Studies," copies of the "Guide to Trees and Shrubs" are furnished free upon request. Ten copies are sent free to each high school, academy or college in the State, and additional copies may be obtained at cost, ten cents per copy. The following list indicates the present scope of "Minnesota Plant Studies"; additional numbers of various groups of plants are in preparation.

1. Guide to the Spring Flowers of Minnesota; March 1908 (exhausted)
2. Guide to the Trees and Shrubs of Minnesota; October 1908 (exhausted)
3. Guide to the Ferns and Fern Allies; July 1909
1. Guide to the Spring Flowers, second edition; April 1910
2. Guide to the Trees and Shrubs, second edition; September 1910
4. Minnesota Mushrooms; September 1910
5. Guide to the Autumn Flowers; September 1910

Of the other publications of the Botanical Survey available for schools and plant lovers, "Minnesota Algae" is sent free upon request. The edition of "Minnesota Plant Diseases" is nearly exhausted, and copies can be furnished only to students and those who can make especial use of it. The edition of "Minnesota Plant Life" is completely exhausted, and copies can be obtained only through the dealers in second-hand books.

The University of Minnesota

September 1910

FREDERIC E. CLEMENTS,

Professor of Botany and State Botanist.

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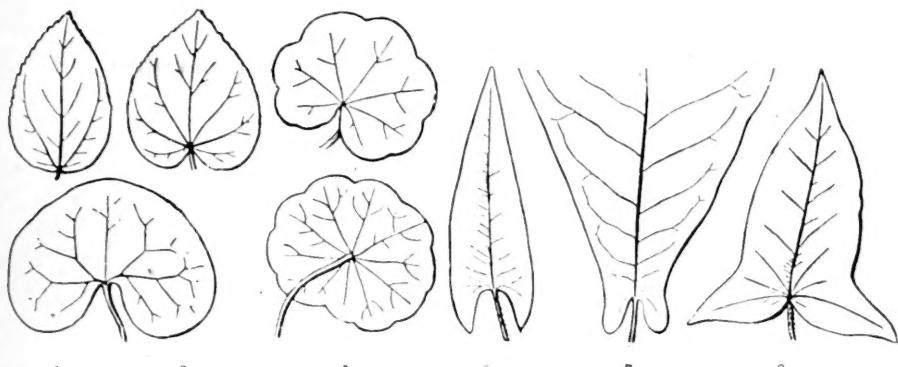
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Introduction

HOW TO USE THE KEY.

The name of a plant consists as a rule of two parts or words, for example, *Pinus strobus*, *Ulmus americana*, *Acer saccharum*, etc. The first word indicates the *genus*, and is always capitalized. The second word indicates the *species*, or kind, and is never capitalized. The meaning of the terms *genus* (plural, *genera*) and *species* (plural, *species*) may be clearly illustrated by the pines and maples. The white pine, jack pine and Norway pine are different kinds, or *species*, of the *genus* of pines, *Pinus*, each one designated by a species name,

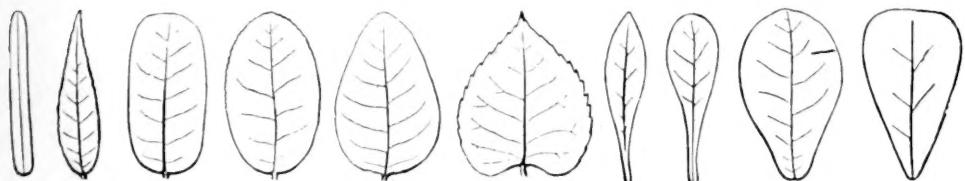
I. LEAF OUTLINES.



1. Rounded. 2. Cordate (heart-shaped). 3, 4. Reniform (kidney-shaped). 5. Peltate (shield-shaped). 6. Sagittate (arrow-shaped). 7. Auriculate (eared). 8. Hastate (halberd-shaped).

strobus, *divaricata* and *resinosa*, respectively. The hard maple, soft maple, red maple and the boxelder are different species of the maple genus, *Acer*; they are designated by the respective species names, *saccharum*, *saccharinum*, *rubrum* and *negundo*. Genera which are related to each other are placed in the same family, for example, the pines, spruces, firs and larches in the pine family, *Pinaceae*; the roses, apples, plums, cherries, hawthorns, etc. in the rose family, *Rosaceae*. The ending, *-aceae*, which is always used to denote a family, is the feminine plural of the Latin suffix, *-aceus*, meaning *like* or *related to*.

II. LEAF OUTLINES AND BASES.



1. Linear. 2. Lanceolate (lance-shaped). 3. Oblong. 4. Elliptic. 5. Oval. 6. Ovate (egg-shaped). 7. Oblanceolate. 8. Spatulate (spatula-like). 9. Obovate (reversed ovate). 10. Cuneate (wedge-shaped).

family name, *Rosaceae*, is really an adjective agreeing with *plantae*, plants, and meaning "plants related to the rose." Related families are themselves grouped into orders, which also bear a distinctive ending, e. g., *Pinales*, *Rosales*. This ending is likewise in the feminine plural, and the meaning of the name is "plant families related to the pine family," etc. Orders are further arranged into larger groups, such as *Monocotyledons*, flowering plants with a single seed leaf, scattered bundles in the stem, parallel-veined leaves, and a flower

INTRODUCTION.

plan of 3, and *Dicotyledons*, with two seed leaves, ringed bundles, netted-veined leaves and a flower plan of 5 or 4. These two groups form the *Angiosperms*, with closed pistils and usually with sepals and petals, which are contrasted with the *Gymnosperms*, with open pistils and no sepals or petals.

III. LEAF EDGES.



1. Serrate (saw-toothed). 2. Dentate (toothed).
3. Crenate (scalloped). 4. Undulate (wavy).
5. Sinuate (bayed). 6. Incised (jagged).

scriptions, and then find the name of the species by means of the key given under each genus. In tracing a plant, the beginner should avoid at every turn the temptation to guess at the points of structure necessary for making a choice. This is equally true of the terms used; it is useless to attempt to find the name of a plant without a clear-cut idea of the difference between simple and compound, opposite and alternate, toothed and entire leaves, etc. Technical terms have been avoided in so far as possible, but the simpler ones are indispensable, and the student should familiarize himself with them as soon as possible. A careful study of the accompanying illustrations will soon give him the knowledge necessary to the ready and trustworthy use of the keys.

V. LOBED LEAVES.



Pinnately: 1. Lobed. 3. Cleft. 5. Parted. 7. Divided.
Palmately: 2. Lobed. 4. Cleft. 6. Parted. 8. Divided.

In using the key, the beginner will note that he must choose between "I. Leaves needle-like or scale-like" and "II. Leaves not needle-like or scale-like." In the case of the oak, for example, choice is made of II, and the decision then lies between "1. Trees" and "2. Shrubs and vines." The choice of 1 leads to "a. Leaves simple" and "b. Leaves compound," and then under a to "(1) Leaves not lobed" and "(2) Leaves lobed," and so on by the method of choice until one is lead to the oak genus, *Quercus*. Upon turning to page 16, the student should verify his choice by deciding whether the plant in question agrees with the family and genus de-

IV. LEAF TIPS.



1. Acuminate. 2. Acute. 3. Obtuse. 4. Truncate. 5. Retuse.
6. Emarginate. 7. Obovate. 8. Cuspidate. 9. Mucronate.

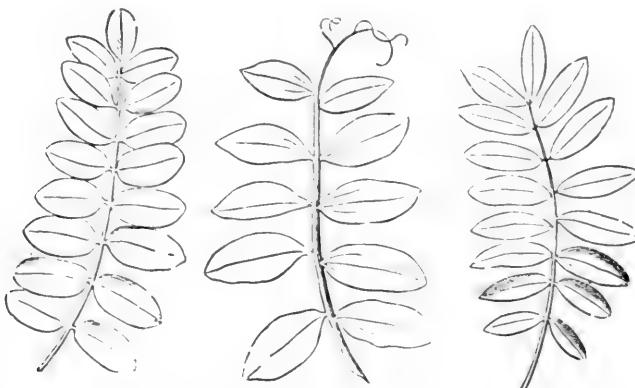
PRONUNCIATION

The names of plants, families, etc., are pronounced as in Latin. The accent has been indicated for each name. Quantity has not been indicated, since for the beginner all vowels may well be regarded as long. Consonants are essentially the same as in English, with the exception of *c* and *g*, which are always hard, *j* pronounced

like *y* and *v* like *w*. The sound of the vowels may be indicated as follows: *a* as ah; *e* as ay; *i* as ee; *o* as oh; *u* as oo; Greek *y* much like the German *ü*. The diphthongs are as follows: *ae* as aye; *au* as ow in how; *oe* as oy; *ei* as ay; *eu* as eoo; *ui* as ooee.

VERIFICATION AND DETERMINATION OF SPECIMENS

The beginner will necessarily find occasional plants which he is unable to name. Even

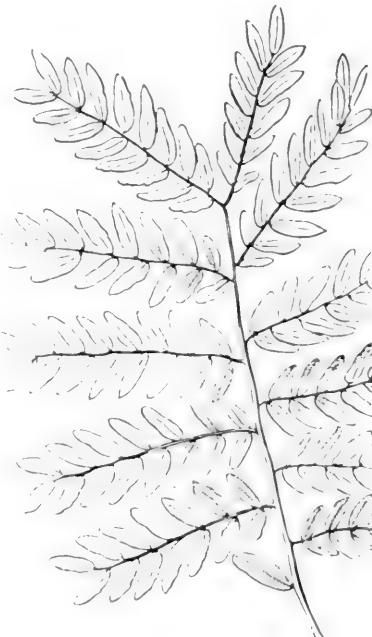


1. Odd-pinnate. 2. Tendril-pinnate. 3. Even-pinnate.

the student of more experience will now and then find very puzzling forms. In such cases, it is necessary to refer the question to a good herbarium if one is accessible, or to the botanist. The department of botany will be glad to have fresh or dried plants sent to it for verification or determination at any time. This applies to mushrooms and other lower forms as well as to flowering plants. Fresh specimens can be sent



4. Palmate or digitate



5. Twice-pinnate.

VI. COMPOUND LEAVES.

readily through the mails by wrapping them in moist paper and placing them in a pasteboard box. The department will also be glad to verify the dried specimens in the herbaria of high schools or of individual students.

Key to the Genera

I. Leaves needle-like or scale-like		
1. Leaves alternate or fascicled		
a. Leaves all alternate and scattered		
(1) Trees with fragrant leaves		
(a) Leaves square, inserted on prominent bases	<i>Picea: spruce</i>	7
(b) Leaves flat		
x. Leaves bright green; cones hanging	<i>Pseudotsuga; Douglas spruce</i>	7
y. Leaves dark and glossy above, whitish below; cones erect	<i>Abies: fir</i>	7
(2) Shrubs, leaves not fragrant		
(a) Leaves minute and scale-like, less than 2 mm. long	<i>Tamarix: tamarisk</i>	19
(b) Leaves more than 2 mm. long, not scale-like		
x. Leaves turned in at the edge, blunt	<i>Empetrum: crowberry</i>	15
y. Leaves flat, sharp-pointed	<i>Taxus: yew</i>	8
b. Leaves or some of them fascicled		
(1) Leaves deciduous, many in each fascicle	<i>Larix: larch</i>	7
(2) Leaves persistent, 2-5 in each fascicle	<i>Pinus: pine</i>	7
2. Leaves opposite or in whorls of three		
a. Leaves in whorls of three, needle-like, jointed at base	<i>Juniperus: juniper</i>	8
b. Leaves opposite, scale-like, appressed on mature branches		
(1) Twigs flattened; pairs of leaves of two kinds alternating	<i>Thuja: arbor vitae</i>	8
(2) Twigs not flattened; leaves all alike on the same twigs	<i>Sabina: red cedar</i>	8
II. Leaves not needle-like or scale-like		
1. Trees		
a. Leaves simple		
(1) Leaves not lobed		
(a) Leaves ovate to round, broad		
x. Leaves entire, very large	<i>Catalpa: catalpa</i>	22
y. Leaves serrate to dentate		
(x) Twigs very tough; fruit round, persistent, stalk winged	<i>Tilia: basswood</i>	20
(y) Twigs brittle; fruit disappearing in spring	<i>Populus: cottonwood</i>	19
(b) Leaves somewhat oblong, much longer than broad		
x. Leaves opposite	<i>Viburnum: black haw</i>	18
y. Leaves both opposite and alternate, persistent in autumn	<i>Rhamnus: buckthorn</i>	13
z. Leaves alternate		
(x) Leaves two-ranked, or apparently so		
m. Sap milky; small trees	<i>Morus: mulberry</i>	20
n. Sap not milky		
(m) Leaves with one distinct midvein		
r. Bark smooth, except when very old, splotched	<i>Carpinus: hornbeam</i>	16
s. Bark rough		

KEY TO THE GENERA.

(r)	Leaves very oblique at base; bark coarsely furrowed	<i>Ulmus: elm</i>	20
(s)	Leaf base not oblique; bark finely furrowed	<i>Ostrya: ironwood</i>	16
(n)	Leaves with three large veins at base; bark ridged	<i>Celtis: hackberry</i>	20
(y)	Leaves not two-ranked		
m.	Bark with long conspicuous lenticels	<i>Betula: birch</i>	16
n.	Bark without conspicuous lenticels		
(m)	Leaves doubly serrate or toothed		
r.	Stems and twigs more or less thorny	<i>Crataegus: hawthorn</i>	11
s.	Stems and twigs without thorns	<i>Malus: apple</i>	10
(n)	Leaf margin with a single row of teeth		
r.	Buds small, scales overlapping, many; fruit fleshy	<i>Prunus: plum, cherry</i>	11
s.	Buds larger, covered by a single scale; fruit dry	<i>Salix: willow</i>	19
(2)	Leaves lobed		
(a)	Leaves opposite	<i>Acer: maple</i>	15
(b)	Leaves alternate		
x.	Leaves two-ranked	<i>Morus: mulberry</i>	20
y.	Leaves more than two-ranked		
(x)	Leaves deeply cut-lobed; bark white		
m.	Leaves small, bark separating into papery layers	<i>Betula: birch</i>	16
n.	Leaves silvery beneath, bark not papery	<i>Populus: poplar</i>	19
(y)	Leaves less lobed; bark not white		
m.	Leaf margin toothed	<i>Crataegus: hawthorn</i>	11
(m)	Stems and twigs thorny	<i>Malus: apple</i>	10
(n)	Stems and twigs not thorny	<i>Quercus: oak</i>	16
n.	Leaf margin entire		
b.	Leaves compound		
(1)	Leaves palmate		
(a)	Leaflets 3	<i>Ptelea: hopetree</i>	20
(b)	Leaflets many	<i>Aesculus: horse chestnut</i>	14
(2)	Leaves pinnate		
(a)	Leaves even-pinnate		
x.	Leaves twice-compound		
(x)	Leaves 3-9 dm. long; leaflets ovate	<i>Gymnocladus: coffee tree</i>	11
(y)	Leaves 1-2½ dm. long; leaflets oblong	<i>Gleditsia: honey locust</i>	11
y.	Leaves once-compound	<i>Caragana: pea tree</i>	12
(b)	Leaves odd-pinnate		
x.	Leaves opposite		
(x)	Leaflets entire or finely serrate	<i>Fraxinus: ash</i>	21
(y)	Leaflets lobed or doubly serrate	<i>Acer: boxelder</i>	15
y.	Leaves alternate		
(x)	Leaflets entire	<i>Robinia: locust</i>	12
(y)	Leaflets at least finely serrate		
m.	Large tree; fruit a nut		
(m)	Pith in plates; leaflets 11-23	<i>Juglans: walnut, butternut</i>	15
(n)	Pith solid; leaflets 5-11	<i>Hicoria: hickory</i>	16
n.	Small trees; fruit fleshy, bright red		
(m)	Sap milky	<i>Rhus: sumac</i>	15
(n)	Sap not milky	<i>Sorbus: mountain ash</i>	10
2.	Shrubs or vines		
a.	Leaves evergreen and leathery		
(1)	Creeping or prostrate shrubs		
(a)	Leaves narrowly linear, thick, edges folded back	<i>Empetrum: crowberry</i>	15
(b)	Leaves lanceolate to rounded, rarely linear		

x.	Leaves less than 12 mm. long		
(x)	Leaves much longer than wide	<i>Oxycoccus</i> : <i>cranberry</i>	21
(y)	Leaves broadly ovate	<i>Chiogenes</i> : <i>snowberry</i>	21
y.	Leaves regularly more than 12 mm. long		
(x)	Leaves serrate, fragrant	<i>Gaultheria</i> : <i>wintergreen</i>	21
(y)	Leaves entire, not fragrant		
m.	Leaves narrowed at base		
(m)	Leaves scarcely 12 mm. long; pale and resinous below	<i>Vaccinium</i> : <i>mountain cranberry</i>	21
(n)	Leaves 12-25 mm. long; green and veined below	<i>Arctostaphylos</i> : <i>bearberry</i>	21
n.	Leaf base not narrowed; leaf broadly elliptic	<i>Epigaea</i> : <i>trailing arbutus</i>	21
(2)	Erect shrubs		
(a)	Leaves entire, with revolute margins		
x.	Leaves woolly below	<i>Ledum</i> : <i>Labrador tea</i>	21
y.	Leaves smooth and white below		
(x)	Leaves opposite or in threes	<i>Kalmia</i> : <i>swamp laurel</i>	21
(y)	Leaves alternate	<i>Andromeda</i> : <i>moorwort</i>	21
(b)	Leaves finely toothed	<i>Chamaedaphne</i> : <i>leatherleaf</i>	21
b.	Leaves deciduous		
(1)	Leaves simple		
(a)	Leaves not lobed on mature twigs		
x.	Leaves opposite		
(x)	Leaves entire		
m.	Leaves silvery-scurfy	<i>Lepidagyraceae</i> : <i>buffalo berry</i>	14
n.	Leaves green		
(m)	Stems hollow		
r.	Low shrubs $\frac{1}{2}$ -1 m. high	<i>Symporicarpus</i> : <i>wolf-berry</i>	18
s.	Tall shrubs or vines, over 1 m. high	<i>Lonicera</i> : <i>honeysuckle</i>	18
(n)	Stems solid		
r.	Leaves pale or hairy beneath	<i>Lonicera</i> : <i>honeysuckle</i>	18
(r)	Leaves very short-petioled	<i>Cornus</i> : <i>dogwood</i>	17
(s)	Leaves long-petioled	<i>Syringa</i> : <i>lilac</i>	20
s.	Leaves not pale or hairy beneath		
(y)	Leaves toothed		
m.	Leaves mostly in whorls of three	<i>Hydrangea</i> : <i>hydrangea</i>	12
n.	Leaves in twos, strictly opposite		
(m)	Buds hidden by the petiole	<i>Philadelphus</i> : <i>syringa</i>	12
(n)	Buds not hidden		
r.	Leaves coarsely toothed	<i>Viburnum</i> : <i>viburnum</i>	18
s.	Leaves finely serrate		
(r)	Bark ridged, roots white	<i>Euonymus</i> : <i>burning bush</i>	13
(s)	Shrubs 1.7-2.3 m. high; bark not ridged		
h.	Petioles distinct; natives	<i>Diervilla</i> : <i>bush honeysuckle</i>	18
i.	Petioles very short or lacking; cultivated		
(t)	Shrubs 2-5 m. high, petioles wide and glandular	<i>Weigelia</i> : <i>weigelia</i>	18
		<i>Viburnum</i> : <i>black haw</i>	18
y.	Leaves alternate or fascicled		
(x)	Thorny shrubs with fascicled leaves	<i>Berberis</i> : <i>barberry</i>	8
(y)	Shrubs or vines with alternate leaves		
m.	Leaves entire		
(m)	Leaves silvery	<i>Elaeagnus</i> : <i>silverberry</i>	14
(n)	Leaves not silvery		
r.	Thorny vines	<i>Smilax</i> : <i>smilax</i>	9

KEY TO THE GENERA.

s. Smooth shrubs		
(r) Tall shrub; leaves crowded at tips of twigs	<i>Cornus: dogwood</i>	17
(s) Low shrubs		
h. Bark very tough	<i>Dirca: leatherwood</i>	14
i. Bark not especially tough		
(h) Leaves resinous below	<i>Gaylussacia: huckleberry</i>	22
(i) Leaves not resinous	<i>Vaccinium: huckleberry</i>	21
n. Leaves toothed		
(m) Twining vine	<i>Celastrus: bittersweet</i>	13
(n) Shrubs		
r. Leaves with three distinct veins	<i>Ceanothus: redroot</i>	13
s. Leaves pinnately veined		
(r) Leaves unequal at base	<i>Hamamelis: witch hazel</i>	12
(s) Leaf bases equal		
h. Shrubs with spines or thorns		
(h) Spiny shrubs, about 1 m., leaves smooth and glossy above	<i>Cydonia: Japanese quince</i>	10
(i) Thorny shrubs, taller, leaves not glossy	<i>Crataegus: hawthorn</i>	11
i. Shrubs without thorns		
(h) Leaves blunt to rounded at tip		
p. Leaves fragrant	<i>Myrica: sweet gale</i>	17
q. Leaves not fragrant		
(p) Cultivated shrub	<i>Spiraea: spiraea</i>	9
(q) Native shrubs		
e. Tall shrub; leaves over 5 cm. <i>Alnus: alder</i>		16
f. Low shrub; leaves less than 5 cm.		
(e) Swamp shrubs	<i>Betula: birch</i>	16
(f) Shrubs of dry ground	<i>Amelanchier: juneberry</i>	10
(i) Leaves acute to long-pointed at tip		
p. Leaves long-pointed		
(p) Leaves broadly ovate	<i>Corylus: hazel-nut</i>	16
(q) Leaves lanceolate to linear	<i>Salix: willow</i>	17
q. Leaves acute but not long-pointed		
(p) Fruit fleshy		
e. Fruit with a single stone	<i>Prunus: plum, cherry</i>	11
f. Fruit several-seeded		
(e) Fruits solitary or 1-3 in a cluster		
v. Fruit red	<i>Ilex: winterberry</i>	14
w. Fruit black, some leaves often opposite	<i>Rhamnus: buckthorn</i>	13
(f) Fruits several or many in a loose cluster		
v. Fruit ripening in mid-summer	<i>Amelanchier: juneberry</i>	10
w. Fruit ripening in the fall	<i>Aronia: chokeberry</i>	11
g. Fruit many-seeded	<i>Vaccinium: huckleberry</i>	21
(q) Fruit dry		
e. Fruits in catkins; seeds cotony	<i>Salix: willow</i>	19
f. Fruits in branched clusters	<i>Spiraea: spiraea</i>	9
(b) Leaves lobed		
(x) Leaves opposite		

KEY TO THE GENERA.

5

(x) Petioles usually with stipules and glands	<i>Viburnum: viburnum</i>	16
(y) Petioles without stipules or glands		
m. Leaves sharply and deeply lobed	<i>Acer: maple</i>	15
n. Leaves crenately lobed	<i>Symporicarpus: snowberry</i>	18
y. Leaves alternate		
(x) Leaf margin entire		
m. Vines with broad palmately veined leaves	<i>Menispernum: moonseed</i>	9
n. Low aromatic shrub with linear leaves	<i>Comptonia: comptonia</i>	17
o. Low densely silky shrubs; leaves with linear lobes	<i>Artemisia: wormwood</i>	19
(y) Leaf margin toothed		
m. High-climbing vines		
(m) Tendrils coiling, without disks	<i>Vitis: grape</i>	14
(n) Tendrils attached by disks	<i>Parthenocissus: Boston ivy</i>	13
n. Shrubs		
(m) Bark many-layered, splitting into shreds	<i>Opulaster: ninebark</i>	9
(n) Bark firm		
(r) Tall shrub with thorns	<i>Crataegus: hawthorn</i>	11
(s) Bushes, sometimes prickly		
(r) Leaves 1-2½ dm. broad	<i>Rubus: raspberry</i>	9
(s) Leaves 1-10 cm. broad		
h. Leaves broad, deeply lobed	<i>Ribes: currant, gooseberry</i>	12
i. Leaves longer than broad, slightly lobed	<i>Spiraea: spiraea</i>	9
(2) Leaves compound		
(a) Leaves pinnate		
x. Leaves opposite		
(x) Vines		
m. Flowers solitary, usually on the old wood	<i>Atragene: atragene</i>	8
n. Flowers clustered on the new wood	<i>Clematis: clematis</i>	8
(y) Shrubs	<i>Sambucus: elderberry</i>	18
y. Leaves alternate		
(x) Leaf margin entire		
m. Leaves odd-pinnate		
(m) Tall spiny shrub with aromatic leaves	<i>Xanthoxylum: prickly ash</i>	20
(n) Low bristly shrub; leaves not aromatic	<i>Robinia: rose acacia</i>	12
(o) Neither spiny nor aromatic		
r. Leaflets over 5 cm. long	<i>Rhus: poison sumac</i>	15
s. Leaflets 5 cm. or less		
(r) Leaflets 5-7	<i>Potentilla: potentilla</i>	9
(s) Leaflets 11-49	<i>Amorpha: amorpha</i>	12
n. Leaves even-pinnate	<i>Caragana: pea tree</i>	12
(y) Leaf margin toothed		
m. Leaflets 3-5		
(m) Low small shrub or tall vine; leaflets obscurely toothed or sometimes lobed	<i>Rhus: poison ivy</i>	15
(n) Spiny bushes; leaflets coarsely toothed	<i>Rubus: raspberry, blackberry</i>	9
(o) Smooth shrubs; leaves finely serrate	<i>Staphylea: bladder nut</i>	14
n. Leaflets 5-many		
(m) Bushes or vines, usually prickly	<i>Rosa: rose</i>	10
(n) Shrubs		
r. Sap milky	<i>Rhus: sumac</i>	15
s. Sap clear		
(r) Tall native shrub	<i>Sorbus: mountain ash</i>	10
(s) Low cultivated shrub	<i>Sorbaria:</i>	10
(b) Leaves palmate		
x. Vine with tendrils	<i>Parthenocissus: woodbine</i>	13
y. Bushes	<i>Rubus: blackberry</i>	9

Spermatophytes

Gymnospermae'

Pinales

Pináceae—Pine Family

Flowering Plants

Gymnosperms

Pine Order

Resinous trees or shrubs; leaves needle-like or scale-like, usually evergreen; flowers monoecious or dioecious, cone-like; staminate of an elongated axis bearing numerous scale-like or peltate stamens; the pistillate flower of an axis bearing scales in a single or double series, the fertile scales bearing 1-many (usually 2) naked ovules; fruit usually a cone with hard dry scales, occasionally berry-like, the scales becoming fleshy.

Pícea—Spruce

(*L. picea*, pitch pine)

Evergreen trees; leaves needle-like, usually four-cornered in cross-section, sharp-pointed; cones pendulous with persistent scales.

1. Leaves glaucous *P. parryana*; *blue spruce*
2. Leaves green
 - a. Cones over 8 cm. long. *P. excelsa*; *Norway spruce*
 - b. Cones less than 8 cm. long
 - (1) Twigs glabrous and glaucous: leaves light-green *P. canadensis*; *white spruce*
 - (2) Twigs pubescent; leaves dark green *P. mariana*; *black spruce*

Pseudotsúga—Douglas Spruce

(Gr. *pseudes*, false, Jap. *tsuga*, hemlock)

Evergreen trees; leaves needle-like, flat in cross-section, soft and blunt; cones pendulous with persistent scales and conspicuous three-pointed bracts.

A single species

P. taxifolia; *Douglas spruce*

Ábies—Balsam Fir

(*L. abies*, silver fir)

Evergreen trees; leaves needle-like, flat in cross-section, firm and blunt; cones erect, scales falling away from the persistent axis.

Trees with fragrant leaves and balsam-bearing bark. *A. balsamea*; *balsam fir*

Lárix—Larch, Tamarack

(*L. larix*, larch tree)

Deciduous trees; leaves needle-like, very many in each fascicle, soft, bright-yellow in the fall; cones erect or ascending, with persistent scales.

1. Cones 1-2 cm. long; native swamp tree *L. americana*; *tamarack*
2. Cones 3-5 cm. long; cultivated *L. europaea*; *larch*

Pínus—Pine

(*L. pinus*, pine tree)

Evergreen trees; leaves needle-like, in fascicles of 2-5; cones ascending to pendulous, with persistent scales.

1. Leaves five in each fascicle *P. strobus*; *white pine*
2. Leaves two in each fascicle
 - a. Leaves 10-15 cm. long, thick
 - (1) Leaf sheath long; native *P. resinosa*; *Norway pine*
 - (2) Leaf sheath short, leaf sharp-pointed; cult. *P. austriaca*; *Austrian pine*
 - b. Leaves 3-8 cm. long, flat
 - (1) Erect trees
 - a. Leaves not rigid, twisted, 3-7 cm. long; cultivated *P. sylvestris*; *Scotch pine*
 - b. Leaves rigid, straight, 2-4 cm. long; native *P. divaricata*; *jack pine*
 - (2) Dwarf tree or shrub; cultivated *P. montana mughus*; *mugho pine*

PINE FAMILY—MOONSEED FAMILY.

Thúja—White Cedar, Arbor-Vitae

(Gr. *thyia*, arbor vitae)

Evergreen trees or shrubs; leaves scale-like, small, in opposite pairs, twigs flattened; cones very small, with a few persistent scales.

Swamp tree with flat twigs and scale-like fragrant leaves *T. occidentalis*

Sabína—Red Cedar, Savin

(L. *sabina*, a kind of juniper)

Evergreen trees or shrubs; leaves scale-like, or needle-like, opposite; cones fleshy, berry-like, blue.

1. Tree or tall shrub *S. virginiana*; red cedar
2. Depressed or creeping glaucous shrub *S. sabina*; savin

Juníperus—Juniper

(L. *Juniperus*, juniper tree)

Evergreen shrubs; leaves awl-shaped in whorls of 3; cones berry-like, blue.

Shrub with awl-shaped leaves in whorls of 3, blue berries *J. communis*

Taxáceae—Yew Family

Evergreen shrubs or trees; flowers dioecious or monoecious, staminate flowers cone-like, consisting of an axis bearing stamens, pistillate flowers not cone-like, much reduced, the ovules commonly solitary and exposed; seeds exposed, with a fleshy outer integument.

Táxus—Yew

(L. *taxus*, yew tree)Low evergreen shrub, fruit a red berry *T. minor*

Angiospermae Angiosperms

Ranales Buttercup Order

Ranunculáceae—Buttercup Family

Herbs or climbing shrubs, with simple or compound leaves; sepals 3-15, petals 0-15, stamens 5-many, pistil 1-many; flower apocarpous, apopetalous or apetalous, hypogynous, usually regular.

Clématis—Clematis

(Gr. *klematis*, a climbing plant)

Herbs or vines, mostly somewhat woody; leaves opposite, pinnate; fruit a feathery achene.

1. Leaflets toothed; flowering in summer *C. virginiana*
2. Leaflets entire; flowering in autumn *C. paniculata*

Atrágene—Atragene

(Name unexplained)

Woody vine; leaves opposite, pinnate; fruit a feathery achene.

A single species *A. americana*

Berberidáceae—Barberry Family

Herbs or shrubs with alternate simple or compound leaves; flower parts usually in whorls of 3, sepals 6-9, petals 6-9, stamens 6-18, pistil 1, simple; flower apopetalous, hypogynous, regular.

Bérberis—Barberry

(Arabic name)

Introduced, spiny, deciduous shrubs with fascicled leaves; fruit an elongated red berry.

1. Leaves serrate; fruit in a raceme *B. vulgaris*
2. Leaves entire; fruit mostly solitary *B. thunbergii*

Menispermáceae—Mooneed Family

Twining vines with alternate leaves; sepals 4-8, petals 6-8, stamens 12-24, pistils 2-4; flower apocarpous, apopetalous, hypogynous, regular.

Menispérmum—Moonseed

(Gr. *mene*, moon, *sperma*, seed)

Twining vine with ovate leaves and greenish flowers.

A single species

M. canadense

Liliales Lily Order

Smilacáceae—Smilax Family

Plants with woody or herbaceous stems, mostly vines, often prickly; leaves broad, net-veined; sepals 3, petals 3, stamens 6, ovary 3-celled; flowers syncarpous, apopetalous, hypogynous, regular, dioecious.

Smilax—Greenbrier

(Gr. *smilax*, bindweed)

1. Leaves rounded or lanceolate, with 5 veins, prickles not very numerous.
2. Leaves with 7 veins, prickles very numerous

S. rotundifolia
S. hispida

Rosales Rose Order

Rosáceae—Rose Family

Herbs, shrubs or trees with alternate simple or compound leaves; sepals 5, often with 5 bracteoles alternating with them, petals 5, or rarely 0, stamens 5-many, pistils 1-many, simple and free or with the ovaries united into a 2-10-celled compound ovary; flower apocarpous or syncarpous, apopetalous, hypogynous or mostly perigynous, regular.

Potentilla—Potentilla

(L. *potens*, powerful)

Herbs or bushes; leaves alternate, compound, entire, silky, leaflets 3-7; fruit of dry seed-like achenes.

A single shrubby species

P. fruticosa

Rúbus—Blackberry, Raspberry

(L. *rubus*, bramble-bush)

Shrubs or bushes, sometimes prostrate, usually with prickles; leaves simple and lobed, or compound; fruit a multiple drupe, berry-like.

1. Leaves simple, lobed; stems unarmed
2. Leaves compound
 - a. Stems prostrate
 - (1) Leaflets thick, obtuse; scarcely shrubby
 - (2) Leaflets thin, acute; shrubby
 - b. Stems erect
 - (1) Prickles stout and recurved; fruit solid
 - (2) Prickles weak; fruit hollow
 - (a) Young stems with hooked bristles; rooting at tips, glaucous; fruit black
 - (b) Young stems with weak glandular bristles; fruit red

R. parviflorus; thimbleberry*R. hispida*; swamp blackberry
R. canadensis; dewberry*R. nigropaucus*; blackberry*R. occidentalis*; black raspberry*R. strigosus*; red raspberry

Opuláster—Ninebark

(L. *opulaster*, a kind of wild tree)

Shrubs with very shreddy bark; leaves alternate, lobed, simple; fruit a follicle.

A single species

O. intermedia

Spiráea—Spiraea

(Gr. *spíra*, meadowsweet)

Small shrubs; leaves alternate, simple, toothed or lobed; fruit a follicle.

1. Leaves lobed; cultivated; spring flowering
2. Leaves not lobed; native; summer flowering
 - a. Glabrous or nearly so throughout
 - b. Twigs and lower surfaces of leaves woolly-pubescent

*S. van houttei**S. salicifolia**S. tomentosa*

ROSE FAMILY

Sorbária

(L. *sorbus*, service tree)

Shrubs with alternate pinnately compound leaves; fruit a follicle.

A single species

S. sorbifolia

Rósa—Rose

(L. *rosa*, a rose)

Bushes, sometimes climbers, usually with prickles; leaves compound, odd-pinnate, leaflets 3-11; fruit fleshy and berry-like, containing many seed-like achenes.

1. Native species

a. Flower branches unarmed or nearly so; sepals erect in fruit

R. blanda

b. Stems all densely prickly

(1) Leaflets 3-9, often resinous, obtuse at base; flowers solitary

R. aciculáris

(2) Leaflets 7-11, not resinous; flowers several in a cluster

R. arkansána

2. Cultivated species

a. Shrubs

(1) Spines nearly straight, little larger at base

R. rugósa

(a) Leaflets more than 3 cm. long, leathery

(b) Leaflets about 1 cm. long, not leathery

x. Leaves glandular, fragrant when crushed

(x) Twigs brown, densely spiny; flowers yellow *R. hemisphaérica*(y) Twigs green; spines scattered; flowers pink *R. rubiginósa*; sweet brier

y. Leaves glabrous, scentless; spines numerous, bristle-like

R. spinosíssima; Scotch rose

(2) Spines enlarged at base, stout and often hooked; garden hybrids

b. Vines

(1) Stipules entire

R. setígera; prairie rose

(2) Stipules deeply cut

R. multiflóra; rambler rose

Cydónia—Quince

(Named for the city Cydon in Crete)

Trees or shrubs with alternate simple leaves; fruit a many-seeded pome.

Low thorny cultivated shrub with glossy leaves and scarlet flowers *C. japónica*

Sórbus—Mountain Ash

(L. *sorbus*, service-tree)

Trees or shrubs; leaves alternate, compound, odd-pinnate, leaflets many; fruit berry-like, red and fleshy, borne in large clusters.

1. Leaflets acuminate, smooth on both sides

S. americána

2. Leaflets more or less obtuse, hairy on the lower side

S. sambucifolia

Málus—Apple

(L. *malus*, apple-tree)

Trees or shrubs; leaves alternate, toothed or lobed; fruit a pome.

1. Leaves narrowed at the base; native

M. ioénsis; wild crabapple

2. Leaves rounded or cordate at base; cultivated

M. malus; apple

Amelánchier—June-berry, Service-berry

(The Savoy name)

Trees or shrubs; leaves alternate, simple, toothed; fruit berry-like, red and fleshy.

1. Leaves rounded or truncate at apex

A. alnifolia

2. Leaves narrowed and acute at the apex

A. oligocárpa

a. Flowers and fruits 1-4 in a cluster

A. canadénsis

b. Flowers and fruits several to many in a cluster

A. botryápium

(1) Hairs of young leaves quickly disappearing

A. canadénsis

(2) Hairs of young leaves dense, woolly and persistent

Arónia—Chokeberry

(Name unexplained)

Trees or shrubs; leaves alternate, simple, toothed; fruit berry-like.

1. Inflorescence and lower sides of leaves woolly *A. arbutifolia*
2. Inflorescence and leaves glabrous *A. nigra*

Crataégus—Thorn, Hawthorn

(Gr. *krataegos*, a thorn)

Trees or shrubs, usually spiny; leaves alternate, simple, usually both toothed and lobed; fruit a scarlet pome.

1. Leaves merely serrate
 - a. Leaves 2-5 cm. long; thorns 5-10 cm. long *C. crus-galli*
 - b. Leaves 5-8 cm. long; thorns 2-5 cm. long *C. punctata*
2. Leaves distinctly lobed, as well as serrate
 - a. Leaves broadly ovate, 8-12 cm. long; twigs dense hairy *C. mollis*
 - b. Leaves elliptic to ovate, 5-8 cm. long; twigs smooth
 - (1) Leaves mostly fine-hairy below *C. succulenta*
 - (2) Leaves mostly smooth below *C. coccinea*

Prúnus—Plum, Cherry

(L. *prunus*, plum tree)

Trees or shrubs; leaves alternate, simple, toothed; fruit fleshy with a single stone, i. e., a drupe.

1. Dwarf shrubs with narrow leaves
 - a. Branches wand-like; leaves thin, acute at apex; eastern *P. pumila*
 - b. Branches bushy; leaves thick, somewhat acute; western *P. besseyi*
2. Large shrubs or trees; leaves usually broad
 - a. Branches usually thorny; fruit solitary
 - (1) Stone of fruit flat *P. nigra*
 - (2) Stone of fruit round *P. americana*
 - b. Branches not thorny; fruit clustered
 - (1) Fruit black in a raceme; leaves strong-smelling when bruised
 - (a) Shrub or small tree with broadly ovate leaves *P. virginiana*
 - (b) Large tree with narrow ovate or lanceolate leaves *P. serotina*
 - (2) Fruit red in a small corymb; leaves not strong-smelling *P. pensylvanica*

Fabáceae—Pea Family

Herbs, shrubs, vines or trees with alternate mostly compound leaves; sepals 4-5, petals 5, rarely fewer, stamens 10, usually in two groups, pistil 1, simple, 1-many seeded; flower apopetalous, hypogynous or perigynous, irregular. The typical flower of this family, e. g., the pea, has the sepals united into an irregular cup. The petals are of three forms, an upper odd petal (standard), two lateral spreading petals (wings) and the two lower ones (keel) more or less united and enclosing the stamens and pistils. The stamens are usually united by their filaments in a group of nine, the tenth stamen being free.

Gledítsia—Honey Locust

(Named for Gleditsch)

Large thorny trees; leaves alternate, once or twice compound, even-pinnate, leaflets many; fruit a large flat twisted pod.

A single species *G. triacanthia*

Gymnócladus—Kentucky Coffee-tree

(Gr. *gymnos*, naked, *klados*, branch)

Trees; leaves alternate, twice-compound, even-pinnate, sometimes odd-pinnate, leaflets many; fruit a short thick pod.

A single species *G. dioeca*

Robínia—Locust

(Named for the brothers Robin)

Thorny trees or shrubs; leaves alternate, compound, odd-pinnate, leaflets 9-19; fruit a flat straight pod.

1. Tree with glabrous foliage and twigs
2. Low shrub with bristly twigs

R. pseudacacia; locust
R. hispida; rose acacia

Amórpha—Amorpha

(Gr. **amorphe**, formless)

Low shrubs or bushes; leaves alternate, compound, odd-pinnate, glandular-dotted; fruit a small curved pod; in dense spikes.

1. Tall, 1-3 m. high; leaflets 2-5 cm. long
2. Low shrubs, one third-1 m. high; leaflets 6-12 mm. long
 - a. Densely silky-hairy all over
 - b. Smooth, or nearly so

A. fruticosa
A. canescens
A. nana

Caragána—Pea tree

Shrubs or small trees; leaves alternate, compound, even pinnate; fruit a narrow pod.

1. Small tree, leaflets 8-18
2. Shrub, leaflets 4, almost palmate

C. arborescens
C. frutescens

Saxifragáceae—Saxifrage Family

Shrubs or herbs; leaves alternate or opposite; sepals 5, rarely 4, petals 5, rarely none, stamens 5-10, ovary 1-several-celled; fruit various; flower syncarpous, apopetalous, perigynous to epigynous, regular.

Hydrángaea—Hydrangea

(Gr. **hydros**, water, **angeion**, vessel)

Shrubs or small trees; leaves opposite or whorled, simple, toothed; fruit a membranous capsule.

A single cultivated species

H. paniculata grandiflora

Philadélphus—Mock Orange, Syringa

(Gr. **philadelphon**, a sweet-flowering shrub)

Shrubs; leaves opposite, simple; fruit a many-seeded capsule.

1. Leaves broadly ovate, 8-12 cm. long
2. Leaves elliptic or ovate-elliptic, 12-20 cm. long

P. grandiflorus
P. coronarius

Hamamelidáceae—Witch Hazel Family

Trees or shrubs; leaves alternate, simple, toothed or lobed; sepals 5-0, united, petals 4-many or none, stamens 4-many, ovary 2-celled; fruit a capsule; flower syncarpous, apopetalous or apetalous, perigynous, regular.

Hamamélis—Witch Hazel

(Gr. **hamamelis**, service-tree)

Shrubs; leaves alternate, simple, wavy-toothed; fruit a woody capsule.

A single species

H. virginiana

Grossulariáceae—Gooseberry Family

Shrubs with alternate or clustered leaves and often with spines; sepals 4-5, petals 4-5, stamens 4-5, ovary 1-celled; flowers syncarpous, apopetalous, epigynous, regular.

Ríbes—Gooseberry, Currant

(Of uncertain derivation)

Shrubs or bushes; leaves alternate, simple, lobed; fruit a berry, red or black.

1. Stems usually with spines; gooseberries
 - a. Spines stout, usually in threes
 - b. Spines slender
2. (1) Branches usually densely bristly
 - (2) Branches with few or no bristles

R. uva-crispa
R. lacustre

(a) Petioles smooth	<i>R. missouriense</i>
(b) Petioles pubescent	
x. Berries prickly	<i>R. cynosbati</i>
y. Berries smooth	<i>R. oxycanthoides</i>
2. Stems always smooth; currants	
a. Leaf lobes few-toothed or entire	<i>R. aureum</i>
b. Leaf lobes toothed throughout	
(1) Leaves with resinous dots, at least below	
(a) Swamp species	<i>R. hudsonianum</i>
(b) Woodland species	<i>R. floridum</i>
(2) Leaves without resinous dots	
(a) Upright cultivated shrub	<i>R. vulgare</i>
(b) Prostrate native shrub	<i>R. triste</i>

Celastrales Bittersweet Order

Celastraceae—Bittersweet Family

Trees and shrubs, sometimes climbing, with simple, opposite or alternate leaves; sepals 4-5, more or less united, petals 4-5, stamens 4-5, ovary 3-5-celled; fruit fleshy, dehiscent; flower syncarpous, apetalous, hypogynous, regular.

Euonymus—Burning Bush, Wahoo

(Gr. *eu*, good, *onyma*, name)

Shrubs; leaves opposite, simple, entire or toothed; fruit a 3-5-lobed capsule.
A single species *E. atropurpureus*

Celastrus—Bittersweet

(Gr. *kelastron*, an evergreen tree)

Woody climbers; leaves alternate, simple, finely toothed; fruit a yellow 2-4-celled capsule, exposing the scarlet aril when ripe.

A single species *C. scandens*

Rhamnaceae—Buckthorn Family

Shrubs or small trees, with alternate simple leaves; sepals 4-5, petals 4-5, rarely none, stamens 4-5, ovary 2-5-celled; flower syncarpous, apetalous or apetalous, perigynous, regular.

Rhamnus—Buckthorn

(Gr. *rhamnos*, buckthorn)

Shrubs or small trees; leaves alternate or sometimes opposite, simple; fruit berry-like, black.

- Often thorny; leaves 3-6 cm. long; large shrub or tree *R. cathartica*
- Thornless; leaves 5-10 cm. long; small shrub *R. alnifolia*

Ceanothus—Redroot

(Gr. *keanothus*, a kind of thistle)

Shrubs or bushes; leaves alternate, simple, toothed; fruit a 3-lobed capsule.

- Leaves ovate to ovate-oblong, finely hairy *C. americanus*
- Leaves oblong or oval, nearly smooth *C. ovatus*

Vitaceae—Grape Family

Woody vines with tendrils; leaves alternate, simple and lobed, or compound; sepals 4-5, often minute, petals 4-5, often disappearing as the flower opens, stamens 4-5, ovary 2-6-celled, fruit a berry; flower syncarpous, apetalous, hypogynous or perigynous, regular.

Parthenocissus—Woodbine, Virginia Creeper

(Gr. *parthenos*, maiden, *kissos*, ivy)

Woody climbers; leaves alternate, lobed or palmate, leaflets usually 5; fruit a black berry.

- Leaves palmate *P. quinquefolia*; woodbine
- Leaves simple and lobed *P. tricuspidata*; Boston ivy

GRAPE FAMILY—MAPLE FAMILY

Vítis—Grape

(L. *vitis*, grapevine)

Woody climbers; leaves alternate, simple, lobed; fruit a dark blue berry.

1. Lower leaf surface velvety or woolly; berries large; cult. *V. labrusca*
2. Lower leaf surface nearly smooth; berries small; native *V. vulpina*

Thymeleáceae—Leatherwood Family

Shrubs; leaves alternate; sepals 4-5, petals 0, stamens 8-10, pistil 1, simple; fruit berry-like; flower apetalous, perigynous, regular.

Dírca—Leatherwood

Shrubs; leaves alternate, simple, entire; fruit berry-like, reddish.

A single species

D. palustris

Elaeagnáceae—Oleaster Family

Shrubs with silvery leaves; sepals 4, petals 0, stamens 4-8, pistil 1, simple; fruit berry-like; flower apetalous, apparently epigynous, regular, often dioecious.

Elaeágñus—Silverberry

(Gr. *elaiagnos*, a marsh shrub)

Shrubs or small trees; leaves alternate, simple, entire, silvery; fruit silvery.

1. Twigs with brown scales; native *E. argéntea*
2. Twigs without brown scales, often thorny; cultivated *E. angustifólia*

Lepargyraéa—Buffalo-berry

(Gr. *lepis*, scale, *argyros*, silvery)

Shrubs; leaves opposite, simple, entire, silvery; fruit red or yellow.

A single species

L. argéntea

Ilicáceae—Holly Family

Shrubs or trees; leaves alternate, simple, entire or toothed; fruit small, berry-like; sepals 3-6, petals 4-6, stamens usually 4-6, ovary 3-several-celled; flower syncarpous, apetalous, perigynous, regular.

Ílex—Holly

(L. *ílex*, holly oak)

Shrubs or trees; leaves alternate, simple; fruit a berry-like drupe, red or black.

A single species with small red berries

I. verticilláta

Sapindales Maple Order

Staphyleáceae—Bladdernut Family

Trees or shrubs; leaves opposite, pinnate; sepals 5, petals 5, stamens 5, ovary 2-3-celled, fruit bladdery; flower syncarpous, apetalous, perigynous, regular.

Staphyléa—Bladdernut

(Gr. *staphyle*, a bunch of grapes)

Leaves pinnately trifoliate

S. trifólia

Hippocastanáceae—Horse Chestnut Family

Trees or shrubs; leaves opposite, palmate; fruit a leathery capsule; sepals 5, petals 4-5, stamens 5-8, ovary 3-celled; flower syncarpous, apetalous, perigynous, somewhat irregular.

Aésculus—Buckeye

(L. *aesculus*, a kind of oak)

Trees or shrubs; leaves usually of 5 leaflets; fruit often prickly.

A single species

Ac. glábra

Aceráceae—Maple Family

Trees or large shrubs with opposite, lobed or compound leaves; sepals 5, petals 5 or 0, sta-

stamens usually 5 or 8, ovary 2-celled, fruit a pair of winged pistils; flower syncarpous, apopetalous or apetalous, perigynous, dioecious or polygamous, usually regular.

Acer—Maple

(L. *acer*, maple tree)

Trees or large shrubs; leaves simple and lobed or compound; fruit winged, i. e., samaras.

1. Leaves simple, palmately lobed
 - a. Shrub with persistent fruit *A. spicatum*; mountain maple
 - b. Trees
 - (1) Bark deeply furrowed, fruit persistent *A. saccharum*; hard maple
 - (2) Bark not deeply furrowed, fruit falling in June
 - (a) Leaves about 3-lobed, lobes not narrowed at base *A. rubrum*; red maple
 - (b) Leaves deeply 5-lobed, lobes narrowed at base *A. saccharinum*; soft maple
 - (c) Leaves finely and deeply cut; cultivated *A. saccharinum* *wieri*; cut-leaf maple
2. Leaves compound, pinnate *A. negundo*; boxelder

Empetráceae—Crowberry Family

Low evergreen shrubs; leaves alternate, small, linear, entire; fruit a berry-like drupe; sepals 3, petals 2-3, or none, stamens 2-4, ovary 2-several-celled; flower syncarpous, apopetalous or apetalous, dioecious or polygamous, regular.

Empétrum—Crowberry

(Gr. *en*, in, *petros*, stone)

Depressed shrubs with small simple evergreen leaves; fruit berry-like, black.
A single species *E. nigrum*

Anacardiáceae—Sumac Family

Trees, shrubs or woody vines, usually with alternate compound leaves; sepals 3-7, petals 3-7 or none, stamens 3-7, ovary 1-celled; fruit a dry drupe; flower syncarpous, usually apopetalous, perigynous, regular.

Rhús—Sumac, Poison Ivy

(Gr. *rhou*s, sumac)

Shrubs or vines, rarely small trees; leaves alternate, compound, pinnate, leaflets 3-35; fruit berry-like, red or white. Our white-berried species are poisonous to the touch, the red-berried ones are harmless.

1. Erect shrubs or trees; leaflets numerous
 - a. Leaflets toothed; fruit red
 - (1) Twigs hairy *R. hirta*; stag-horn sumac
 - (2) Twigs smooth *R. glabra*; smooth sumac
 - b. Leaflets deeply lobed and cut—cultivated forms
 - (1) Twigs hairy *R. lústa laciniata*
 - (2) Twigs smooth *R. glabra laciniata*
 - c. Leaflets entire, fruit white; poisonous! *R. vénix*; poison sumac
2. Vine or low shrub; leaflets three; poisonous! *R. rúdicans*; poison ivy

Juglandáceae—Walnut Family

Trees with alternate odd-pinnate leaves; flowers monoecious, the staminate in catkins; staminate flower with sepals 3-6 or 0, petals 0, stamens 3-many; pistillate flower, sepals 3-5, petals 4 or 0, ovary 1-celled, styles 2; flower syncarpous, apopetalous or apetalous, epigynous, regular.

Júglans—Butternut, Black Walnut

(L. *Juglans*, walnut tree)

Trees; leaves alternate, pinnate; fruit a dry drupe, containing a furrowed nut.

1. Bark gray, twigs and foliage viscid hairy *J. cinérea*; butternut
2. Bark dark brown, twigs and foliage almost smooth *J. nigra*; black walnut

Hicória—Hickory, Bitternut

(From the Indian name)

Trees; leaves alternate, pinnate; fruit with a 4-lobed outer coat; nut not furrowed.

1. Bark shaggy, leaves white-tufted at margin *H. ovata*; shag-bark hickory
2. Bark not shaggy, mature leaves almost smooth *H. minima*; pignut hickory

Betuláceae—Birch Family

Trees or shrubs with alternate simple leaves; flowers monoecious, rarely dioecious, the staminate and often the pistillate also in catkins; staminate flower, sepals 2-4 or 0, petals 0, stamens 2-10; pistillate flower, sepals minute or 0, ovary 1-2-celled, style 2-cleft; flower syncarpous, epigynous, regular.

Córylus—Hazel-nut

(Gr. *korys*, helmet)

Shrubs; leaves alternate, simple; fruit enclosed in a leafy cup.

1. Twigs and petioles densely hairy, involucre of nut short *C. americana*; hazel-nut
2. Twigs and petioles smooth, involucre with a beak *C. rostrata*; beaked hazel-nut

Carpínus—Hornbeam

(Gr. *karpinos*, fruitful)

Trees; leaves alternate, simple; fruit a nut.

Small tree with smooth gray bark and very hard wood *C. caroliniana*

Óstrya—Ironwood

(Gr. *ostrya*, tree with very hard wood)

Trees; leaves alternate, simple; fruit inflated.

Small tree with furrowed bark and very hard wood *O. virginiana*

Bétula—Birch

(L. *betula*, birch-tree)

Trees or shrubs; leaves alternate, simple; fruit winged.

1. Trees
 - a. Bark separating in papery layers
 - (1) Bark white
 - (a) Leaves not deeply lobed; native *B. papyrifera*; paper birch
 - (b) Leaves deeply cut and lobed; cultivated *B. alba pendula*; cut-leaf birch
 - (2) Bark yellow or brown
 - (a) Leaves narrowed at base; pistillate catkins stalked *B. nigra*; river birch
 - (b) Leaves round or cordate at base; catkins not stalked *B. lutea*; yellow birch
 - b. Bark not papery, very fragrant; leaves glossy above *B. lenta*; black birch
2. Low shrubs
 - a. Twigs glandular, leaves glabrous *B. glandulosa*; dwarf birch
 - b. Twigs not glandular, young leaves pubescent *B. pumila*; dwarf birch

Álnus—Alder

(L. *alnus*, alder)

Trees or shrubs; leaves alternate, simple; fruits in a woody catkin.

1. Leaves finely serrate, resinous beneath when young *A. alnobetula*
2. Leaves coarsely serrate, not resinous *A. incana*

Fagáceae—Beech Family

Trees or shrubs with simple often deeply lobed or cleft leaves; flowers monoecious, the staminate in catkins; staminate flower, sepals 4-7, petals 0, stamens 4-20; pistillate flower, sepals disappearing, petals 0, ovary 3-celled; flower syncarpous, epigynous, regular.

Quercus—Oak

(L. *quercus*, oak tree)

Trees or shrubs; leaves alternate, simple; fruit an acorn.

1. Leaves deeply cut or lobed

a. Lobes of leaves acute, bristle-pointed

(1) Leaves dull green, cup of acorn shallow *Q. rubra*; *red oak*

(2) Cup about half as long as acorn

(a) Scales of cup appressed, smooth *Q. ellipsoidalis*;
x. Acorn much elongated *northern pin oak*

y. Acorn nearly round *Q. coccinea*; *scarlet oak*

(b) Scales of cup loose, pubescent *Q. velutina*; *black oak*

b. Lobes of leaves rounded

(1) Leaves dull, smooth, acorn cup not fringed *Q. alba*; *white oak*

(2) Leaves glossy, hairy below; acorn cup fringed *Q. macrocarpa*; *bur oak*

2. Leaves merely crenate

a. Large tree; leaves hairy beneath, acorn long-stalked *Q. platanoïdes*; *swamp white oak*

b. Shrub; leaves smooth, acorn sessile *Q. prinoides*; *chestnut oak*

Myricáceae—Bayberry Family

Shrubs or trees with alternate aromatic simple leaves; flower in catkins, monoecious or dioecious; staminate flower, sepals 0, petals 0, stamens 2-16; pistillate flower, with 2-8 bracts, sepals 0, petals 0, ovary 1-celled, stigmas 2; flower syncarpous, naked.

I. Leaves entire or slightly serrate *Myrica*
II. Leaves deeply cut *Comptonia*

Myrica—Sweet Gale

(Gr. *myrike*, tamarisk)

Shrubs; leaves alternate, simple; fruit a drupe-like nut.
Fragrant swamp shrub, resembling a small willow

M. gale

Comptónia—Comptonia

(Named for Bishop Compton)

Fragrant shrub with thick, linear, deeply cut leaves *C. peregrina*

Apiales Carrot Order

Cornáceae—Dogwood Family

Shrubs and trees, rarely herbs, usually with opposite leaves; sepals 4, rarely 5, petals 4, stamens 4, pistil 1-2-celled, style 1; flower syncarpous, apopetalous, epigynous, regular.

Córnus—Dogwood

(L. *cornus*, cornel)

Shrubs or small trees; leaves simple, usually opposite, petioled, entire; fruit berry-like, white or blue.

I. Leaves opposite

a. Twigs green; leaves broadly ovate or rounded *C. amórum*

b. Twigs gray; leaves lanceolate *C. candidissima*

c. Twigs red, purple or yellow; leaves ovate

(1) Leaves pubescent beneath

(a) Fruit blue *C. amórum*
(b) Fruit white *C. baileyi*

(2) Leaves glabrous and glaucous beneath *C. stolonifera*

2. Leaves alternate, crowded *C. alternifolia*

Rubiales Madder Order

Caprifoliáceae—Honeysuckle Family

Herbs, shrubs or vines with opposite leaves; sepals 3-5, often very tiny, petals 5, stamens 5, ovary 1-6-celled, style 1; flower syncarpous, sympetalous, epigynous, regular or irregular.

Sambúcus—Elder

(L. *sambucus*, elder tree)

Shrubs; leaves opposite, pinnate, leaflets 5-11, serrate; fruit a berry-like drupe.

1. Leaflets ovate-lanceolate, hairy below; pith brown *S. púbens*
2. Leaflets oblong, usually smooth; pith white *S. canadénsis*
3. Leaflets deeply cut and lobed; pith white *S. canadénsis laciniata*

Vibúrnnum—Viburnum, Cranberry-tree, Snowball

(L. *viburnum*, the wayfaring tree)

Shrubs or small trees; leaves opposite, simple, serrate to lobed; fruit berry-like, 1-seeded.

1. Leaves lobed; fruit red
 - a. Leaves deeply lobed
 - (1) Fruit in a large terminal cluster; native *V. ópulus; high-bush cranberry*
 - (2) Fruit absent; cultivated *V. ópulus stérilis; snowball*
 - b. Leaves slightly and irregularly lobed; fruit lateral *V. pauciflórum*
2. Leaves not lobed; fruit black
 - a. Leaves coarsely dentate *V. pubéscens; arrow wood*
 - b. Leaves finely serrate *V. lentágo; black haw*

Symphoricárpus—Wolfberry, Snowberry

(Gr. *syn*, together, *phoreo*, bearing, *karpos*, fruit)

Shrubs; leaves opposite, simple, short-petioled; fruit a 2-seeded berry, red or white.

1. Leaves 1-2 cm. long *S. pauciflórum*
2. Leaves 2-8 cm. long
 - a. Berry white; style smooth
 - (1) Leaves mostly 2-5 cm. long *S. racemósus*
 - (2) Leaves mostly 5-8 cm. long *S. occidentális*
 - b. Berry red, persistent; style bearded *S. symphoricárpus*

Lonícera—Honeysuckle

(From Lonitzer, a German botanist)

Shrubs or climbing vines; leaves opposite, simple, mostly entire, often perfoliate; fruit a berry.

1. Vines; clusters several-flowered, terminal; upper leaves perfoliate
 - a. Low native vine *L. dioéca*
 - b. High-climbing cultivated vine *L. sempérvirens; trumpet h.*
2. Erect shrubs; flowers in pairs
 - a. Leaves somewhat pubescent, not cordate; mostly native
 - (1) Leaf margin bristly
 - (a) Leaves pale, thick, veiny; fruit blue *L. coerílea*
 - (b) Leaves bright green, thin; fruit red *L. ciliáta*
 - (c) Leaves dark green, thick; fruit red, very persistent; cultivated *L. morrówi*
 - (2) Leaf margin not bristly; fruit red *L. oblongifólia*
 - b. Leaves glabrous, cordate; cultivated *L. tatárica; twin honeysuckle*

Diervílla—Bush honeysuckle

(Named for Dierville)

Shrubs; leaves opposite, simple, toothed; flowers small; fruit a many-seeded capsule.

A single species *D. diervilla*

Weigélia—Weigelia

(Named for Weigel)

Shrubs; leaves opposite, simple, toothed; flowers large; fruit a many-seeded capsule.

A single species *W. hýbrida*

Asterales Aster Order

Asteráceae—Aster Family

Herbs; flowers in dense heads, sepals usually forming a pappus, petals 5, stamens 5 or 0, ovary 1-celled, stigmas 2, fruit an achene; flower syncarpous, sympetalous, epigynous.

Artemisia—Wormwood

(Gr. *artemisia*, wormwood)Perennials often with woody stems; leaves divided; fruit an achene.
A single species *A. frigida*

Caryophyllales Pink Order

Tamaricáceae—Tamarisk Family

Trees and shrubs with alternate scale-like leaves; sepals 4-5, petals 4-5, stamens 4-5 or many, ovary 1-celled; fruit a capsule with many small hairy seeds; flower syncarpous, apopetalous, hypogynous, regular

Támarix—Tamarisk

Shrubs or trees with minute scale-like leaves, and dense racemes of very small pink flowers.
Cultivated shrub with flowers in spring, petals 4 *T. parviflora*

Salicáceae—Willow Family

Trees or shrubs with simple leaves; sepals 0, petals 0, stamens 1-60, ovary 1-celled, capsule 2-4-valved, seeds hairy; flowers dioecious, calyx and corolla both lacking.

Sálix—Willow

(L. *salix*, a willow-tree)

Trees or shrubs; leaves alternate, simple, buds with a single scale; fruit a capsule, seeds cotony.

1. Leaves and stipules with glands	<i>S. lúcida</i>
2. Leaves and stipules without glands	
a. Leaves glabrous on both sides when mature	
(1) Leaves narrow, linear-lanceolate, low shrub	<i>S. fluviátilis</i>
(2) Leaves broader, lanceolate to ovate	
(a) Leaves oblong-lanceolate, merely acute	<i>S. discolor</i>
(b) Leaves acuminate	<i>S. nigra</i>
b. Leaves pubescent or tomentose below	
(1) Leaves oblong, low bog shrub	<i>S. cándida</i>
(2) Leaves broadly lanceolate, or oblanceolate	
(a) Leaves elliptic to lanceolate	<i>S. bebbiána</i>
(b) Leaves oblanceolate	
x. Leaves 5-10 cm. long	<i>S. húmilib</i>
y. Leaves 2-5 cm. long	<i>S. tristis</i>

Pópulus—Poplar, Cottonwood, Aspen

(L. *populus*, a poplar-tree)

Trees or shrubs; leaves alternate, simple, buds with several scales; fruit a capsule, seeds cotony.

1. Leaves with strongly flattened petioles	
a. Twigs and under surfaces of leaf white-hairy; leaves often deeply lobed, and maple-like	<i>P. álba</i>
b. Twigs and mature leaves smooth	
(1) Leaves coarsely wavy-toothed	<i>P. grandidentáta</i>
(2) Leaves more finely crenate-toothed	
(a) Leaves round or ovate, short-pointed	<i>P. tremuloides; aspen</i>
(b) Leaves truncate at base, long-pointed	
x. Branches spreading; crown broad	<i>P. deltoídes; cottonwood</i>
y. Branches erect; crown very narrow	<i>P. nigra itálica; Lombardy poplar</i>
2. Leaves with round or channeled petioles	
a. Leaves smooth on both sides	<i>P. balsamifera; balsam poplar</i>
b. Leaves hairy below	<i>P. cándicans; balm of gilead</i>

Malvales Mallow Order

Tiliaceae—Linden Family

Trees or shrubs with alternate simple leaves and a clear sap; sepals 5, petals 5-0, stamens many, usually in 5-10 groups, ovary 2-10-celled; fruit berry-like; flower syncarpous, apetalous or apetalous, hypogynous, regular.

Tilia—Basswood, Linden

(L. *tilia*, linden)

Trees; leaves alternate, simple, serrate, usually with unequal bases; fruit dry, 1-2-seeded.
A single species

T. americana

Moraceae—Mulberry Family

Trees with simple leaves and usually a milky juice; sepals 4-5, petals 0, stamens 4-5, ovary 1-celled; flower syncarpous, apetalous, hypogynous.

Morus—Mulberry

(Gr. *morea*, mulberry-tree)

Trees; leaves alternate, simple; fruit aggregate, berry-like.
Tree with milky sap and dentate leaves

M. rubra

Ulmaceae—Elm Family

Trees with alternate simple serrate leaves; sepals 3-9, petals 0, stamens 3-9, ovary 1-celled, stigmas 2; flowers perfect to polygamous, syncarpous, apetalous, hypogynous.

Ulmus—Elm

(L. *ulmus*, elm-tree)

Trees; leaves alternate, simple; fruit winged.

1. Bud-scales densely brown hairy, samara not ciliate *U. fulva*; *slippery elm*
2. Bud-scales smooth, samara ciliate
 - a. Some of the twigs with corky lines, sides of fruit hairy *U. racemosa*; *rock elm*
 - b. None of the twigs with corky lines, sides of fruit smooth *U. americana*; *white elm*

Celtis—Hackberry

Trees; leaves alternate, simple; fruit a berry-like drupe.
Tree with ridged bark, and simple serrate leaves

C. occidentalis

Geriales Geranium Order

Rutaceae—Rue Family

Trees or shrubs, usually with compound leaves; sepals 4-5 or none, petals 4-5, stamens 4-10, pistils distinct, 2-5, or compound; flower apocarpous or syncarpous, apetalous, hypogynous, regular.

Xanthoxylum—Prickly Ash

(Gr. *xanthos*, yellow, *xylon*, wood)

Trees or shrubs usually spiny; leaves alternate, odd-pinnate; fruit fleshy.
Small tree; leaves pinnate, leaflets 5-11; flowers greenish

X. americanum

Ptelea—Hoptree

(Gr. *ptelea*, elm)

Shrubs or small trees; smooth; leaves alternate, 3-5-foliate; fruit a 2-winged samara.
A single species

P. trifoliata

Oleaceae—Olive Family

Trees or shrubs with simple or pinnate leaves; sepals 4, petals 2-4 or none, stamens 2-4, ovary 2-celled; flowers perfect to dioecious, syncarpous, often apetalous, hypogynous, regular.

Syringa—Lilac

(Gr. *syrix*, a tube)

Shrubs; leaves opposite, simple, entire; fruit a leathery capsule.

1. Leaves ovate, cordate at base, 5-12 cm. long *S. vulgaris*
2. Leaves smaller, not cordate, 2-8 cm. long *S. persica*

Fráxinus—Ash

(L. *fraxinus*, ash-tree)

Trees; leaves opposite, pinnate; fruit winged.

1. Lateral leaflets sessile
2. Lateral leaflets stalked
 - a. Wing mostly at the end of fruit
 - b. Wing extending down the sides of fruit
 - (1) Leaves and twigs velvety
 - (2) Leaves and twigs smooth

F. nigra; black ash
F. americana; white ash
F. pennsylvanica; red ash
F. lanceolata; green ash

Ericáceae—Heath Family

Herbs or shrubs with simple leaves; sepals 4-5, petals 4-5, stamens 4-10, ovary 2-5-celled, flower syncarpous, usually sympetalous, hypogynous, regular.

Lédum—Labrador Tea

(Gr. *ledon*, an oriental shrub)

Evergreen shrub with simple entire leaves; flowers white

L. groenländicum

Kálmia—Swamp Laurel

(Named for Peter Kalm)

Evergreen shrubs with purple flowers

K. glauca

Andrómeda—Moorwort

(Named from Andromeda)

Evergreen shrub with linear leaves; white flowers in umbels

A. polifolia

Chamaedáphne—Leatherleaf

(Gr. *chamae*, on the ground, *Daphne*)

Leaves oblong, scurfy, denticulate; flowers white, in 1-sided racemes

C. calyculata

Epigaéa—Trailing Arbutus

(Gr. *epigeios*, on the earth)

Leaves oval; flowers rose-colored

E. repens

Arctostáphylos—Bearberry

(Gr. *arctos*, bear, *staphyle*, grape)

Leaves spatulate; flowers white or pinkish

A. uva-ursi

Gaulthériá—Wintergreen

(Named for Gaulther)

Evergreen shrub; leaves alternate, simple, serrate

G. procumbens

Vacciniáceae—Huckleberry Family

Shrubs with alternate simple leaves; sepals 4-5, petals 4-5, stamens 8-10, ovary 2-10-celled; flower syncarpous, mostly sympetalous, epigynous, regular.

Oxycóccus—Cranberry

(Gr. *oxys*, sour, *kokkos*, berry)

Creeping evergreen shrubs with very small ovate to oblong leaves; fruit a scarlet berry.

1. Leaves oval or oblong, obtuse
2. Leaves ovate, acute

O. macrocarpus
O. oxycoccus

Chiógenes—Snowberry

(Gr. *chion*, snow, *genes*, born)

Creeping evergreen shrubs with oval leaves; flowers and fruit white

C. hispida

Vaccínium—Huckleberry, Blueberry, Cranberry

(L. *vaccinum*, blueberry)

Shrubs, rarely evergreen; leaves alternate, simple; fruit a berry, blue to red.

1. Leaves evergreen

V. vitis-idaea; mountain c.

2. Leaves deciduous

a. Low shrubs, 1-6 dm. high

(1) Leaves pale and glaucous beneath *V. uliginósum*; *bilberry*

(2) Leaves green or hairy below

(a) Leaves green and shining on both sides *V. caespítosum*; *bilberry*

(b) Leaves not shining below but usually hairy

x. Twigs and leaves pubescent *V. canadéense*; *blueberry*

y. Twigs and leaves glabrous *V. pennsylvanicum*; *blueberry*

b. Tall shrubs, 6 dm.-5 m. high

(1) Stems 6 dm.-2 m. high *V. stamineum*

(2) Stems 2-5 m. high *V. corymbosum*

Gaylussácia—Huckleberry

(Named for the chemist, Gay-Lussac)

Shrubs; leaves alternate, simple, entire or toothed; fruit berry-like, blue or black.

A single species *G. resinosa*

Scrophulariales Snapdragon Order

Bignoniáceae—Trumpet-creeper Family

Trees or vines with compound or simple leaves; sepals 5, petals 5, stamens 2-4, ovary 2-celled; flowers syncarpous, sympetalous, hypogynous, irregular.

Catálpa—Catalpa

(The Indian name)

Trees; leaves opposite, simple, entire; fruit an elongated capsule.

A single species *C. catálpa*

Glossary

Achene A dry, one-seeded fruit
Acuminate Gradually tapering to a point
Acute Sharp-pointed
Alternate Not opposite; with a single leaf at each place of attachment
Annual Lasting only one growing season
Anther The upper part of the stamen, containing the pollen; the pollen pouch
Apetalous Without petals
Apex Tip or upper end
Apocarpous Having or consisting of separate carpels
Apopetalous Having or consisting of separate petals
Appressed Lying close to or against another organ
Aquatic Growing in the water
Ascending Growing obliquely upward
Awl-shaped Narrowed upward from the base to a slender, rigid point
Awn A slender bristle-like structure
Awn-pointed Tipped with an awn
Axil The angle between leaf and stem
Axillary Borne in the axils of leaves
Axis A term generally applied to that portion of a branch which bears the flowers or the parts of a flower

Barbed Having a tip like a fish-hook
Basal Arising from the base
Beak An elongated tapering structure
Beaked Bearing a beak
Bearded With hairs limited more or less to a certain area of an organ
Berry A fruit in which the seeds are imbedded in a soft or fleshy substance
Biernate Twice ternate
Blade The flat expanded part of a leaf
Bract A leaf, usually small, standing below a flower or a flower-cluster
Bracteole A small leaf or scale on the pedicel below the flower
Bristle A stiff hair or any similar outgrowth
Bulb A short stem with fleshy scales, usually subterranean
Bulblets Small bulbs
Bulbous Like a bulb; bearing bulbs

Capsule A dry fruit consisting of two or more carpels
Carpel A simple pistil, or one member or division of a compound pistil
Catkin An elongated axis covered with scales all around that bear either stamens or pistils
Cell A cavity or chamber in an ovary
Ciliate Provided with marginal hairs
Claw Applied to the much narrowed lower portion of a petal
Cleft Cut about half way to the middle
Climbing Growing upon a support of some kind
Compound Composed of two or more similar parts united into one whole
Compound leaf One divided into separate leaflets
Cone An elongated axis bearing stamens or thickened scales with naked ovules; the flower and fruit of conifers

Convolute Rolled up lengthwise
Cordate Heart-shaped
Corm A swollen fleshy base of a stem
Corymb A flat-topped or convex open flower cluster
Creeping Growing along the ground
Crenate Scalloped; with rounded, shallow teeth
Crenate-toothed With rounded teeth
Cyme A flower cluster in which the terminal or middle flower blossoms first; usually somewhat flat

Deciduous Falling off at the close of the growing period
Declined Bent down
Decurrent Applied to leaf bases, running down the stem
Dentate Toothed, with outwardly projecting teeth
Denticulate With small teeth
Depressed Vertically flattened
Dioecious Bearing pistils and stamens on different plants
Disk An enlargement of the axis of a flower around the base of the pistil; the group of tubular flowers in the Asteraceae
Dissected Cut or divided into numerous segments
Divided Lobed to the base

Entire Without lobes, divisions, or teeth
Epigynous Applied to a flower with the parts upon the ovary
Erect Standing upright
Even-pinnate Without an odd leaflet at the tip
Exserted Projecting beyond the surrounding parts

Fascicle A dense cluster
Fascicled Borne in dense clusters
Fertile Bearing seeds, or bearing pollen
Filament The stalk bearing the anther
Fleshy Soft, containing more or less sap
Flower An axis bearing stamens or pistils or both; generally sepals and petals are associated with these
Fruit A ripened ovary, sometimes that part of the axis which becomes fleshy as the seeds ripen

Glabrous Without hairs
Gland A secreting surface or structure; any small appendage or protuberance having the appearance of such an organ
Glandular With glands or gland-like
Glaucous Covered with a bluish or white, fine, mealy substance, a bloom
Globose Spherical or nearly so
Glume The small scale of the spikelets of grasses and sedges

Hastate Arrow-shaped but with the basal lobes diverging
Head A dense cluster of sessile or nearly sessile flowers on a very short axis
Herb A non-woody plant which dies annually, at least down to the ground
Herbaceous Of the nature of herbs
Hispid With bristly stiff hairs
Hirsute With somewhat coarse, stiff hairs
Hypogynous Applied to a flower, with the other parts below the ovary

Included Not projecting beyond the surrounding parts
Indehiscent Applied to fruits that do not open or split to let out the seeds
Inferior Applied to an organ situated below another one
Inflorescence The position of a plant bearing the flowers; mode of arrangement of flowers
Integument A projecting layer or coat, as the covering of a seed
Internode The part of the stem between two successive nodes
Involucr A group of leaves or scale-like leaves borne just underneath a flower or a close cluster of flowers
Involucral Of an involucr
Irregular Applied to a flower in which the petals, or other parts, are unlike

Keel The two fused lower petals of the flower of the Pea Family
Keeled Ridged, like the keel of a boat

Lanceolate Shaped like a lance
Lenticel A corky projection on the bark
Ligule A strap-shaped organ, as the rays in the Asteraceae
Ligulate In the form of a strap
Linear Long and narrow with sides nearly parallel
Linear-lanceolate Narrowly lance-shaped
Lip Each of the main upper and lower divisions of a zygomorphic corolla or calyx; the peculiar modified petal of an orchid flower
Lipped Having a lip
Lobed Margin more or less deeply cut or divided

monoecious Bearing stamens and pistils on the same plant but in different flowers

Nerve One of the lines or ridges running through a leaf
Net-veined Veins running in various directions and connecting with each other
Netted-veined Veins running in various directions and connecting with each other
Nodding Hanging on a bent pedicel
Node The part of the stem which normally bears a leaf
Nut A dry, one-seeded, indehiscent fruit with a stony shell or covering
Nutlet A diminutive nut

obcordate Inversely heart-shaped
oblanceolate Inverse of lanceolate
oblong Somewhat longer than broad, with the sides nearly parallel
oblong-lanceolate Broadly lance-shaped
obtuse Rounded or blunt
odd-pinnate With an odd leaflet at the tip
opposite Applied to organs inserted at the same level but 180° apart
orbicular Circular
ovary The part of the pistil in which the young seeds are borne
ovate Shaped like the outline of an egg
ovule A young seed

palmate Radiately lobed or divided
palmately In a palmate manner
Panicle A compound flower cluster, the lower branches longest and blossoming first
pappus The bristles, hairs, awns and like structures which are borne upon the fruit in the Chicory and Aster Families
parasitic Growing upon and getting its nourishment from some other plant
parted Deeply cleft
Peduncle The stalk of a flower or of a flower cluster

Pedicel The stalk of a flower in a flower-cluster
Peltate Shaped like a shield with a stalk attached in the middle below
Perennial Lasting from year to year
Perfect A flower having both stamens and pistils
Perfoliate Leaves appearing to be pierced by the stem
Perigynous Applied to a flower in which the parts are united into a cup around the ovary
Perigynium The sack-like membrane enclosing the ovary or the achene in the genus *Carex*
Persistent Organs that remain attached after the growing season
Petal One of the inner set of flower leaves, usually brightly colored, of a corolla
Petaloid Resembling a petal, especially as to color
Petiole The stalk of a leaf
Pilose With long soft hairs
Pinnate Leaves divided into leaflets or segments along a common stalk
Pinnately In a pinnate manner
Pinnatifid Pinnately cleft to the middle or beyond
Pistil The central or terminal organ in a flower, containing the young seeds
Pistillate With pistils but without stamens
Plumose Having fine hairs on each side like a feather
Plumy Feathery
Pod A dry fruit made up of one carpel and splitting along two sides
Pollen The minute grains found in the anther
Puberulent With very short hairs
Pubescent With hairs

Raceme A more or less elongated axis bearing flowers with about equal pedicels
Ray One of the marginal flowers in the Asteraceae
Receptacle The end of a flower stalk or axis bearing the floral organs; in the Asteraceae bearing flowers
Recurved Bent back
Regular Having the members of each part alike in size and shape
Reniform Kidney-shaped
Resinous Bearing resin
Retrorse Turned downward or backward
Revolute Margin rolled back
Rhombic In outline like a rhombus; obliquely four-sided
Rootstock An underground stem
Rotate Flat and circular in outline; wheel-shaped
Rush-like Resembling a rush

Salver-form Having a slender tube, abruptly expanded into a flat limb
Samara A winged fruit
Scabrous Rough
Scale A minute or much reduced leaf
Scape A leafless or nearly leafless stalk bearing a flower or a cluster of flowers and arising from the underground portion of a plant
Scurfy With small bran-like scales on the epidermis
Segment One of the parts of a flower or similar organ that is cleft or divided
Sepal One of the outer set of flower leaves, usually green
Serrate With teeth projecting forward
Serrulate Finely serrate
Sessile Without a stalk or pedicel
Sheath The part of a leaf or leaf base which clasps or encloses the stem
Sheathing A term applied to the manner in which the base of a leaf wraps the stem
Shrub A woody plant; smaller than a tree
Simple Of one piece, not compound

Sinuate With strongly wavy margins
Spadix A fleshy axis bearing sessile flowers
Spathe A leaf-like structure standing below an inflorescence
Spatulate Spoon-shaped, shaped like a spatula
Spike An axis bearing sessile flowers
Spikelet A small few-flowered spike, the flower cluster of grasses and sedges
Spine A sharp, woody or rigid outgrowth from the stem
Spiny Provided with spines
Spur A hollow projection from the sepal or petal of a flower
Stamen The organ of a flower which bears the pollen
Staminate With stamens but without pistils
Staminoids A sterile stamen
Standard The large upper petal of the flower of the Pea Family
Stigma The top of the pistil to which pollen grains become attached
Stipule Outgrowths of, or appendages to the base of a petiole
Strap-shaped Long and narrow in outline
Style The narrowed or pointed part of the pistil, bearing on its top the stigma
Stylopodium A disk-like expansion at the base of the style, as in the Apiaceae
Submerged Under water
Subtend To stand below on the axis
Superior Applied to an organ situated above another one
Sympetalous Having or consisting of united petals
Syncarpous Having or consisting of carpels joined together

Teeth The regular projection along the margin of a leaf
Tendril A slender coiling organ
Ternate Consisting of three leaflets
Terrestrial Growing on the ground
Thorn A stiff, sharp-pointed outgrowth from the bark or rind
Tomentose Covered with dense, matted, wool-like hairs
Trailing Creeping along the ground
Trifoliate Having three leaflets
Truncate Terminated by a nearly straight edge or surface
Twining Winding spirally about a support

Umbel A flower-cluster with all the pedicels arising from the same point
Umbellate Borne in umbels
Unarmed Without spines, thorns, or prickles

Valve One of the portions into which some dry fruits split; a trapdoor-like opening in the pollen chambers of some anthers
Vestigial Reduced almost to disappearance
Villous With long soft hairs not matted together

Webby With a tuft of slender, curly hairs
Whorl A group of three or more similar organs, as leaves, radiating from the place of attachment
Whorled Borne in a whorl
Wing One of the two lateral petals of the flower of the Pea Family

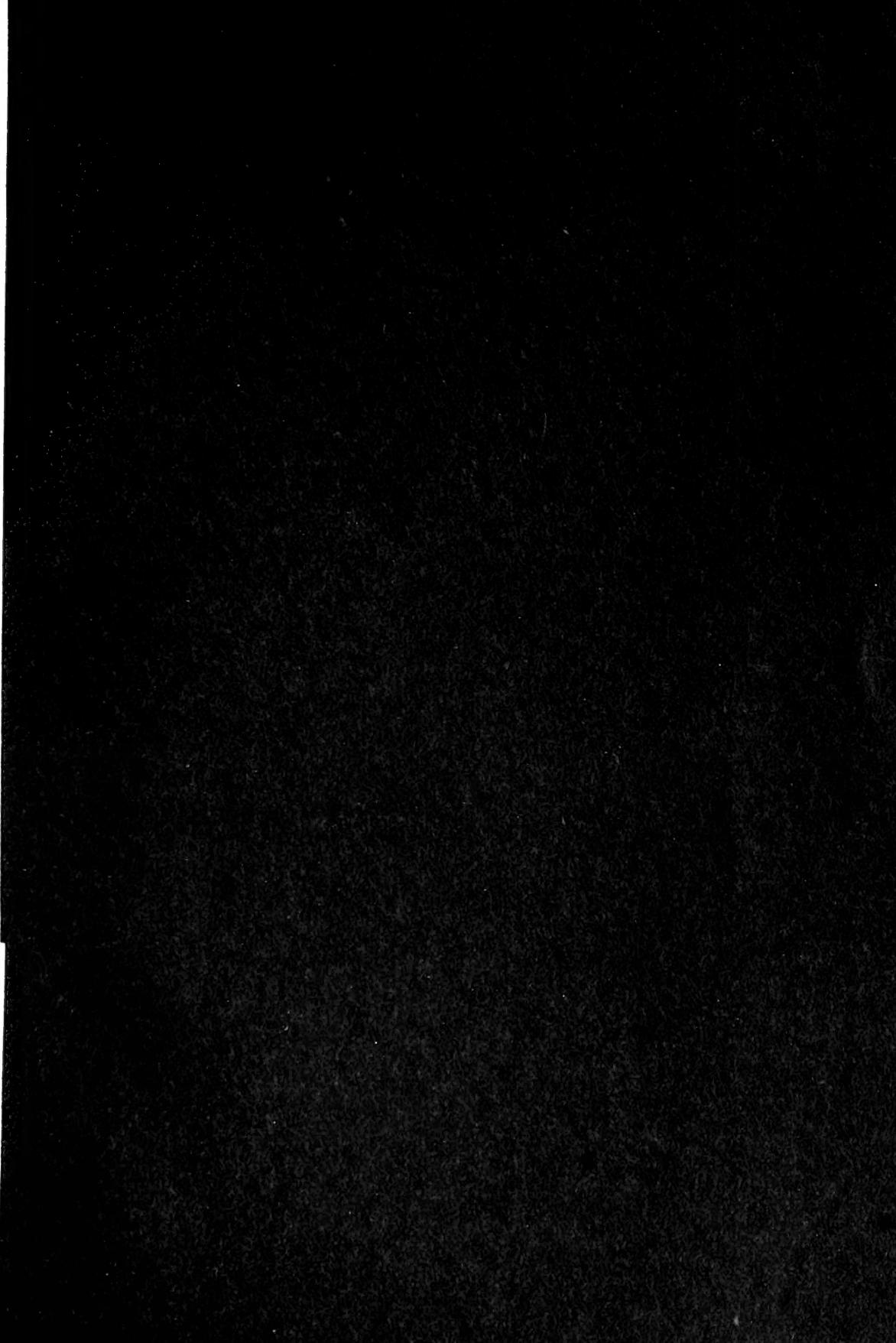
Zygomorphic Applied to a flower with petals of different form

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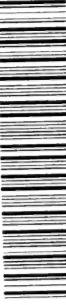
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